Stimulating Creativity through Collaboration in an Innovation Laboratory

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Abstract

Nowadays globalized society and knowledge-based economy need people with creative thinking in all areas (engineering, medicine, art, entrepreneurship, and education). Thus, current studies are turning their attention to find new ways to stimulate creativity over individual or groups. In the present research, we hypothesized that the creativity can be enhanced if it is used social interaction abilities for knowledge sharing and collaboration. We present a collaborative application that provides users with an environment where they can share ideas and they can collaborate to choose those ideas that are most suitable for the intended use. This application provides to users a shared, web-based platform to enhance creativity. In this platform, users are gathered in a Social Group in which they can share ideas, comments, documents and links around. This application is part of a physical environment which provides users a number of tools to stimulate their creativity. If problems arise in the creative process, then the application provides facilities for a coordinator who can use different methods to unlock brainstorming progression.

Keywords: collaboration; creativity; innovation laboratory; iLabs; education;

1. Group creativity and facilitating environments

Creativity is a personality quality and it is specific to each person and is also influenced by personal experience. It is know that any person can be creative, but some are endowed with a richer imagination or maybe some have developed through education creative thinking skills. Creative people create inventions, imagine different situations
or things, solve problems in various fields, create and communicate using innovative methods. When speaking of creativity, most think to a single person, but creativity also results from the collaboration, communication and diversity.

An **Innovation Laboratory** (iLab) is an inspirational innovative facility designed to transport users from their everyday environment into an extraordinary space encouraging creative thinking and problem solving. The idea of iLab is that it is a special place in which groups and teams can explore and extend their thinking beyond the normal boundaries of assumptions and constraints.

An iLab is a combination of three elements (Fig. 1):

1. A physical space specially arranged such that to stimulate the creativity and to provide an inspired and hospitable environment;
2. Web application that work like a social group- social network;
3. Facilitation techniques are used to manage the creative process so that the participants get the most out of their ideas.

The participants to an iLab feel that they are working into a dedicated space and not into a normal working environment. This is because iLab promote into a distinctive design layout a couple of features like privacy, multiple media for working, whiteboard wall, dedicated software.

In recent years, psychologists have demonstrated that creativity is not only a characteristic of an individual, but can be influenced by a specific situation or a context (Shapira & Liberman, 2009). In these circumstances it is necessary to find those situations or contexts that can positively influence the creation of ideas. Psychological studies have shown that various situations and contexts that can positively influence creativity refer to collaboration between several people, the mood of the people involved in the creative process, detaching through time and space from the problem to be solved. Next it will be detailed how we included various situations in the iLab collaborative software and how physical context influences the creative process.

According to the construal level theory (CLT) of psychology (Trope & Liberman, 2010) there is a category of situations called psychological distance that can influence creativity. CLT defines psychological distance on different dimensions like spatial, temporal, and social. The theory introduce the idea according that the bigger distance between a person and an event induces the more abstract thoughts of person about event and the smaller distance induces the more concrete thoughts.

A psychological distance can be any experience of a person who does not happen in the present moment or in the current location or to himself. It is possible that this state of psychological spatial distance to positively influence the way of thinking a problem or updating of another person's idea or project. Also, projecting an event in the remote future, so the event to be less likely can enhance the creativity (Jia, Hirt, & Karpen, 2009).

These changes can be done by using special designed for laboratory space for inducing the feeling of being in another place far away from the current problems (thematic arranged room that stimulate senses with help of suggestive pictures, images, aquariums, miniature gardens, toys, textures, adapted colors for wall and furniture). These are the reasons why iLabs were decorated in many different ways in order to create a vibrant, inspiring and creative environment. In Table 1 are represented data collected from creative sessions using dedicated software held...
in iLab special space or in normal space. It can be seen that in the creative sessions held in the dedicated space of iLab were developed in average more ideas than in a normal space.

Introducing a psychological distance can be done also through communication with people who has same points of interests, but different ideas or opinions. It is known that talking with another person who is outside the subject and asks questions to understand what you try to explain or talking with a person who does not share the same views can be constructive in the sense that it helps to realize deficiencies or mistakes. Using collaborative software can stimulate communication with other persons anonymous or not. This allows participants to share their ideas honestly and frankly, breaking down the traditional hierarchy and caution sometimes found in traditional meetings. The iLab software allows attach comments to ideas thereby stimulating communication between participants.

A number of studies prove influence of positive moods on performance and creativity. A happy person tends to think abstractly, while a person in a negative mood tends to think analytically and systematically. One study (Hirt, Levine, McDonald, & Melton, 1997) demonstrates that a person in a positive or happy affective state show more creative responses to the experimental tasks. This is another reason for that an Innovation Laboratory is organized so as to induce a positive state on people who use the space to create new ideas.

Some psychology theories have demonstrated that the expression of opinions, knowledge verbalization and communication positively influence creativity and knowledge synthesizing. A psychological study (Paulus, Dzindolet, & Kohn, 2011) showed that a collaborative group of people involved in a creative process produced 28% more new ideas than a group of people working individually. This result is explained by the facts that, in the interactive group, members tend to use the ideas of others to build new results, which leads to increased creativity (Paulus & Coskun, 2013). In Table 1 it can be seen that, in general, the number of ideas based on the number of participants is greater than one. This shows that on average, each participant had more than one idea.

<table>
<thead>
<tr>
<th>Name of session</th>
<th>Number of participants</th>
<th>Average number of ideas for a participant</th>
<th>Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sbc-1</td>
<td>9</td>
<td>0.33</td>
<td>Normal</td>
</tr>
<tr>
<td>Saligny college</td>
<td>15</td>
<td>0.73</td>
<td>Normal</td>
</tr>
<tr>
<td>Practice creativity-how to create a java class</td>
<td>7</td>
<td>1.29</td>
<td>iLab</td>
</tr>
<tr>
<td>Sbc-2</td>
<td>15</td>
<td>1.93</td>
<td>iLab</td>
</tr>
<tr>
<td>Cti-promotion</td>
<td>15</td>
<td>2.27</td>
<td>iLab</td>
</tr>
<tr>
<td>CreationICT</td>
<td>7</td>
<td>2.43</td>
<td>iLab</td>
</tr>
<tr>
<td>Dissability applications</td>
<td>9</td>
<td>3.67</td>
<td>iLab</td>
</tr>
</tbody>
</table>

2. A software tool to support creativity

As a general definition, a social group has been defined as at least two persons who interact with one another, have similar characteristics and forms a unity from the point of view of collectivity. In the iLab platform, a social group it is defined as a workspace, in which persons get-together around a specific area of interest. The platform provides tools for social interaction and collaboration like "idea-comment", "question-answer", "resources", and "suggestions". A network in iLab is constructed for “idea-comment” work.

In order to increase creativity iLab stimulates thoughts web application collaboration between members who take part to brain storming process. By definition, collaboration is when two or more persons working together to do a common task and to accomplish a shared goals. It is a recursive process where a group of two or more people work together to achieve common goals. In general, most collaborative tasks require leadership, but different types of leadership can be applied into a group with equal rights. Also, the leader may have just a guidance role and not for imposing rules and constraints. Collaboration is also present in opposing goals when a person comment and debate ideas of others contributors and, at the end of process, the best ideas arise out. This type of collaboration through
debating it is implemented in iLab application with help of voting system. So, it can be said that the iLab application can be registered in the category of collaborative ones. Finding innovative solutions and new ideas is often a collaborative work. Coordinated action of team members is required to find innovative problem solving or solution. Individual creativity can be increased by the group and can be stimulated by social and working environment (Amabile, 1996; Retalis at. al, 2010).

In nowadays, the name of collaborative software can be associated with a large variety of applications like text chat, shared calendar, wiki, social networks, task and time function into project management, electronic conference systems, electronic meeting system, etc. iLab act like a collaborative software that help people involved in a common task to achieve goals. Collaboration entails individuals working together in a coordinated manner to create a shared list of ideas.

Unlike classical creativity sessions (on the paper), in a collaborative system participants introduces their ideas that are immediately visible to all participants. An advantage is to work into an anonymous session because this can overcome social limitations and thus participants create honestly and frankly more parallel ideas shared instantly between group members. iLab combine conversational interaction (between two or more participants with main purpose to free exchange information without constrains) with collaborative interaction (with principal aim to create/modify an entity/idea/design). iLab features are: text chat, document share, time tracking, surveys, charting. iLabs are perfect for any team-based work including strategic planning, conflict management, organizational change, away days, mind mapping, consensus building, consultations, focus groups, training, etc.

The iLab features work together, allowing users to unlock their skills and potential to find applicable solutions. One of the many collaborative working tools in the iLab is the special computer software that gives many benefits. One of them is that the group does not need to stop to write their ideas as the software helps to capture their thoughts and plans as they work. It enables a large number of ideas to be generated, shared and recorded in a short amount of time.

Another aspect that influences creativity is personality. Some people involved in the creative process are introverted, shy, sensitive, or hard integrates into a social group where they have to socialize and to produce new ideas. In support of these people coming special designed iLab application that allows anonymous sessions. The persons who have difficulties to adapt to a social group can use iLab to anonymous introduce new ideas or can comment without fear of being ridiculed.

Facilitation is another component designed to make things happen in an iLab, but not only using the environment and technology, but also using group dynamics and other techniques to manage the process so that the participants get the most out of their ideas. In a modern collaborative application, after brainstorming process follows a categorization stage. Thus, the facilitator of a session in iLab can group ideas in category folders.

3. Analysis of the results obtained in iLab community

The iLab software implements a voting method. After the brainstorming process is done and, eventually, the ideas are categorized, the participants have opportunity to express their opinions about effectiveness of proposed ideas. For that, the application implements an electronic voting system in a separate stage of brainstorming process. Unlike traditional methods of voting by open ballot, electronic voting is anonymous and thus enables more accurate differentiation of new ideas. The results of voting can be view on-line or can be exported into a file.

Data collected and processed following sessions of creativity iLab are encouraging in terms of showing that creativity is stimulated in a particular environment using collaboration. As it can be seen in Figure 2, there is a direct proportion between the number of ideas and the number of comments, so the conclusion is that the collaboration through debating between participants encourages to create more ideas. Increasing the period of a session allows participants to have enough time to move their thinking from proposed topic in the specially designed space of iLab and to encourage communication between participants. All this favors the introduction of a temporal psychological distance that, as we notice above, increases creativity illustrated by the large number of proposed average ideas per person compared with the duration of session, as in Figure 3.
The positive influence of collaboration between session participants over creativity can be seen in Figure 4. There, in the first series is shown scores for ideas groups from different brainstorming sessions and in the second series is shown associated number of comments. It can be seen that the two series follows the same trend. So, the ideas that were gathered high scores also had many comments, which show that interesting ideas are intensively discussed in the group.
4. Conclusions

Even if the number of creative sessions is small, overall results are encouraging and confirmed by studies about methods for increase the creativity. In this paper we show that it can increase personal and collective creativity through:

- A specially designed space that positively influences social and spatial psychological distance and also encourages a positive mood of participants;
- A dedicated software application that: stimulates communication between participants, provides the appropriate framework for debate and voting system, helps introverted people through anonymous session, and provides tools for facilitator in order to influence group dynamics and to streamline the creative process by classifying ideas.

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References


